

Particulate Filtration

The Problems

Particulate filtration is the filtering of solid, undissolved particles from water. The nature and size of solid particles can vary greatly. Some examples are clay particles, sand, organic debris, Iron oxide and Manganese oxide. Particulate filters can be used either on their own, or more commonly, as part of a filtration system. Iron and Manganese filter systems for example sometimes use a backwashable particulate filter. The type and size of filter will depend on the water quality and flow rate.

Cintropur

Cintropur filters consist of clear bowl housing with an internal bag filter stretched over a central spindle. As water enters the housing, the water is spun around, creating a centrifugal force. Particulates are caught by the bag and can be emptied using a manual purge valve located on the bottom of the housing. The advantages of the Cintropur systems are that they can deal with high flow rates and yet the pressure drops are low. There are a number of different sizes to deal with a wide range of flow rates. The bags can be bought in a range of micron sizes and some are washable.



Backwashable filtration systems

There are two different types of backwashable filters, multi media and Turbidex. Both types consist of a blue pressure vessel filled with the media and an automatic backwash valve. The purpose of the valve is to periodically backwash the media bed, thus flushing away (to drain) all of the particulate matter that has built up since the previous backwash. The advantage of these systems is that (apart from servicing) they are labour free. There are no bags or cartridges to change, everything is automatic.

Multi media filters consist of two different grades of sand, gravel and anthracite. This provides a graduated filter bed and can filter down to 25 microns. Anthracite, being carbon based, will also help to remove organics.

Turbidex is a natural ore that has some advantages over sand & gravel filters. The granules have an angular shape, rough surface and microporous void spaces as small as 3 microns. This creates a surface area over 100 times greater than sand. The angularity of the granules and the tapered internal pore spaces allow for reduction of dirt, silt and organic matter suspended in water by bridging, straining and adhesion. The rough surface and internal porosity provide a high surface area, allowing filtration down to 5 microns.

Both systems can be specified in a large number of sizes, using a range of vessels and valves to cover a range of flow rates from domestic to industrial.



Cartridge filters

These are probably the most popular of all particulate filters. The housings can be bought in standard and wide (big blue) versions as well as 10" and 20" lengths. There are also clear bowl options. Cartridges are usually made from wound polypropylene and can be bought in a range of micron sizes. Carbon block cartridges can also be used which have a micron rating.



Particulate Filtration

Cintropur

Cintropur filter	Flow rate	Connections	Available bag sizes (microns)
NW18	3.5m3/hr	3/4" BSPM	5, 25
NW25	5.5m3/hr	1" BSPM	5, 10, 25
NW32	6.5m3/hr	1 1/4" BSPM	5, 25, 50, 100
NW500	20m3/hr	2" BSPM	5, 10, 25, 50, 100
NW650	25m3/hr	2.5" Flanged	5, 10, 25, 50, 100
NW800	30m3/hr	3" Flanged	5, 10, 25, 50, 100

Multi media

Model	1054	1248	1354	1465	1665	1865	2160	2469	3072	3672	4272	4872	55104	6386
Fleck valve	1"	1"	1"	1"	1"	1"	1.5"	1.5"	2"	2"	2"	3"	3"	3"
Clack valve	1"	1"	1"	1"	1"	1"	1.5"	1.5"	2"	2"	2"	3"	3"	3"
Frontal manifold												5x3"	5x3"	5x3"
Flow rate m3/hr	0.6	0.85	1.0	1.20	1.50	1.90	2.60	3.40	5.30	7.70	10.50	14.0	18.0	24.0
Backwash flow rate m3/hr	1.2	1.7	2.0	2.4	3.0	3.80	5.20	6.80	10.60	15.40	21.0	28.0	36.0	48.0
Overall height	1607	1458	1601	1984	1988	2088	2098	2348	2572	2583	2338	2533	3081	3670

Turbidex

Model	1054	1248	1354	1465	1665	1865	2160	2469	3072	3672	4272	4872	55104	6386
Fleck valve	1"	1"	1"	1"	1.5"	1.5"	2.0"	2"	2"	2"	2"	3"	3"	3"
Clack valve	1"	1"	1"	1"	1.5"	1.5"	2.0"	2"	3"	2"	2"	3"	3"	3"
Frontal manifold										5x3"	5x3"	5x3"	5x3"	5x3"
Flow rate m3/hr	1.24	1.79	2.10	2.44	3.18	4.03	5.48	7.16	11.19	16.12	21.94	28.65	37.62	49.36
Backwash flow rate m3/hr	2.4	3.58	4.20	4.87	6.37	8.06	10.97	14.33	22.38	32.23	43.87	57.30	75.23	98.71
Overall height	1607	1458	1601	1984	1988	2088	2098	2348	2572	2583	2338	2533	3081	3670

An example of how particulate filtration can be used as part of an Iron and Manganese filtration system.

